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ABSTRACT

This paper offers observations and suggestions regarding what to do and what not to do when offering an online developmental mathematics course. At Harrisburg Area Community College (HACC), Pennsylvania, online courses were initially offered in 1999. In spring 2002, the authors piloted two online developmental math courses, Intermediate Algebra and Pre-algebra. The Distance Education Office (DEO) at HACC manages all Internet courses. All faculty who are interested in teaching an online course must complete a 12-week Online Academy. The paper offers a 12-point guide for setting up courses, which includes: (1) guidelines for counselors and faculty advisors; (2) course set-up instructions; (3) student registration instructions; (4) a FAQ list for avoiding unnecessary email; (5) writing assignments that encourage students to explore and navigate the course site; (6) take-home assignments sent as attachments; (7) reminders of online and proctored tests; (8) study plans for each upcoming test; (9) review questions to encourage participation; (10) emails to update grades and progress; (11) turn-around timeline to respond to emails; and (12) textbook selection. The paper also offers an eight-point guide for course management. The following are among the materials included in the appendixes: course syllabi; Advising Guidelines; list of Frequently Asked Questions; First Writing Assignment; Grade Record Keeping Sheet; competency lists; course summaries; Student Evaluation of the On-Line Development Math Courses; and student comments. (Author/NB)

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ED 471 532

American Mathematical Association of Two-Year Colleges

Twenty-Eighth Annual Conference
November 14-17, 2002
Phoenix, Arizona

Dos and Don'ts in Offering Online Developmental Math Courses

Oiyin Pauline Chow and Jean M. Shutters

Session S65
Friday, November 15, 2002
9:30 to 10:30 a.m.

Yuma 27, Civic Plaza

Harrisburg Area Community College
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Summary

The presenters will share their observations and suggestions regarding what to do and what to avoid when offering an online developmental mathematics course. Topics will include course set-up, textbook selection and course management.

History

At Harrisburg Area Community College, online courses were initially offered in 1999. In Spring 2002, with the approval from the math faculty, we decided to test the waters. We piloted two online developmental math courses, Intermediate Algebra and Prealgebra. In Fall 2002, we are offering College Algebra as a follow-up and three developmental math courses, PreAlgebra, Beginning Algebra, and Intermediate Algebra.

Institutional Support

The Distance Education Office (DEO) manages all Internet courses. All faculty who are interested in teaching online courses at HACC must complete a 12-week Online Academy. For two hours each week, faculty receive training in course delivery using internet, online research, navigating web browsers, WebCT, Communication and interaction within WebCT, producing HTML documents, file and course management, and online testing and assessment. At the conclusion of the training, faculty will do a course demonstration. At the completion of the course, the faculty will receive a certification with CEU's, if so desired.

Four months prior to the start of the semester, faculty teaching an online course will have to submit to the DEO a course syllabus with detailed information such as the title of the textbook, daily course outline, schedule of both online and proctored tests, grading policy, attendance policy, office hours, and instructor's background. In addition, faculty will submit a general information sheet with information such as hardware and software requirements for the online course, web browser, course website address, course or instructor's ID, instructor's email address, textbook availability, website registration procedure including the available date, and contact person at the college or company for technical help. Three weeks before the start of the semester, the DEO will send the information sheet and course syllabus to students who are enrolled in the online course. See appendix I for samples of information sheets and appendix II for samples of course syllabi.

Since the College has the exclusive license of using WebCT, they require faculty to develop their online courses using WebCT. Faculty who want to use other course websites such as those developed by publishers are required to obtain approval from the Dean of the DEO.

In Spring 2001, we presented our proposal of piloting three online developmental math courses, PreAlgebra, Beginning Algebra, and Intermediate Algebra to the math faculty. After voting twice, we received the blessing from the math group.

In Spring 2002, we piloted two online developmental math courses, adopting MyMathLab for Intermediate Algebra and ALEKS for PreAlgebra.

This Fall, we are offering online courses for Beginning, Intermediate, and College Algebra using MyMathLab and PreAlgebra using ALEKS.

Course Set-Up

1. **Advising Guidelines**

   The most important first step is to develop advising guidelines for the counselors and faculty advisors. Some students enroll in online courses, especially in developmental mathematics courses, for the wrong reasons. Some expect that online classes will be easier, with no attendance requirement, and that the computer will do all the work. See appendix III for our advising guidelines.

2. **Set up the course in the site**

   The course website should be ready before the start of the semester. If you develop your own website using WebCT, then you must have the college technical support and test run your site with all the components, resources, and links. Students will get very frustrated when certain links and access to resources fail to work. If you use the course website developed by the publisher, then make sure you know how to navigate the site, so that you can help your students to navigate the site.

3. **Course ID/Instructor's code and Student Registration Instructions**

   You must include the course ID or instructor code in the information sheet. During the first week of class, most emails from students are related to difficulties experienced in completing the course registration. Some do not follow the instruction of choosing the correct textbook title prior to entering the student access code or downloading and installing plug-ins needed to access the course website.

   In the information sheet, you should include instructions to help students to complete the registration process. If students get frustrated, they either will send emails to you or the contact person for technical help, or they will sit on the problems for weeks.

4. **FAQ**

   If you develop a list of Frequently Asked Questions with answers and share them with students taking your class, then 90% of initial inquiry emails will be eliminated. If students understand your expectation and policy, they will do better in following the course timetable. See appendix IV for a list of FAQ.

5. **Writing Assignment**

   The writing assignment is a short math autobiography to encourage students to explore and navigate the course site. First, students need to navigate the site to locate the announcement. Next they have to read the instructions to locate, download, save, and

print the assignment. After completion, they have to submit the assignment electronically as an attachment to an email. You will be surprised that this is a learning experience for a lot of students. Be prepared to accept documents in Microsoft Word, PDF files, text files, or others. See appendix V for a sample of the math autobiography.

6. **Take-home assignments**

Since students will submit take home assignments as attachments to emails, you should respond promptly by sending the graded homework with your comments electronically. This process will eliminate paper work and will provide students with timely feedback.

7. **Reminders of upcoming scheduled online and proctored tests**

Throughout the semester, reminders are sent out to keep students on track of upcoming online or proctored tests. They should include information such as the number of questions in the test, time limit, and your policy on the use of calculators, note cards, and notes. These reminders serve as a communication channel for you to encourage students' progress.

8. **Study plan**

For each of the upcoming tests, a study plan with a list of topics should be posted in the announcement section. The list includes the study timeline and sections in the chapters. You may post some lecture notes, worked-out examples, and/or review questions. This study plan will help students prepare for the test.

9. **Review questions posted in the announcements or discussion board to encourage participation**

To encourage student participation, review questions may be posted in the announcement or discussion board. If the discussion board is available in the website, students will earn points by submitting their solutions supported with work and explanations. You also will have a chance to post your comments. If the solutions are not quite correct, you may encourage others to jump in with theirs. In addition, the discussion board can create a learning community with dialogs among the students.

10. **Emails to update their grades and progress**

Students need to receive a progress report after each test. The progress report should include their grade in homework, tests, and activities such as participation in the discussion board. It will ease students' anxiety about their grade. See appendix VI for a sample of grade record keeping sheet.

11. **Turn-around time to respond to emails**

It is extremely important to respond to students' emails promptly, preferably within 24 hours during weekdays. The prompt turn-around response time will keep students interested in communicating and corresponding with you. The emails are similar to their visit during your office hours. Students always appreciate a quick reply from the instructor.

12. Textbook Selection

If you choose a textbook that is supported by a web-accessible course site, then you have to do research on the type of package available and the accompanying resources.

For Addison Wesley Longman Company, most textbooks come with the MyMathLab textbook-specific website. It is a comprehensive website with resources such as video lectures, multimedia clips, study plan, tracked exercises, guided solutions, worked-out examples, sample tests, assigned online tests and homework, and a complete package of course management.

For McGraw Hill Company, they have ALEKS. It is a comprehensive system that will continuously assess students' progress and monitor students' mastering skill levels. The progress report is a pie-chart showing topics that have been mastered and study plans showing what else the student can learn and do. It has practice exercises, reviews, worksheets, a message system within the website, and a course management component.

Course Management

Since there is little or no in-person contact with students taking your online courses, it is important to establish frequent contact electronically. You need to keep your students on track by posting the study plan, sending reminders, and mailing progress reports. Since students can learn from their mistakes, all graded proctored tests with solutions should be returned to the students promptly. You also need to engage your online students in enrichment activities similar to those assigned in your regular classes. Enrichment activities can be in the form of take-home assignments, web research projects, items posted in the discussion board, etc. To encourage students to explore and make good use of the package, you may want to add assignments related to the resources available from the website.

A comprehensive course management package should include the following:

1. Announcements - allow you to post announcements with start and expiration dates.
2. Assignments – allow you to post take home assignments for download and assign chapter home work in the site.
3. Discussion Board – post questions to encourage participation.
4. Email – allow you to send email to all or selected students.

5. Scheduled Online tests – allow you to set up and schedule online tests with expiration date, time limit, option for students to review after submission, and password.

6. Sample Tests – allow students to practice.

7. Tracked Exercises – Provide drill-practices.

8. Progress Grade report in MyMathLab and ALEKS

Assessment

To promote consistency in delivering the course material among developmental math courses using nontraditional delivery system (online and intensive computer-assisted), students are required to take a departmental common final examination at HACC. Faculty teaching traditional sections may require their students to take the common final examination.

Competency lists are used to develop the common departmental final examinations. Our goal is to be able to collect enough data for comparisons. See appendix VII for the competency lists and VIII for results and summary.

Evaluation

In addition to participation in the SEEQ evaluation process mandated by the College, we ask students to complete our evaluation form. This form includes questions related to their success or failure in taking the online developmental math courses. See appendix IX for the evaluation form and appendix X for some of the students' comments.

Technology Glitches or Woes

When we offered the two online developmental math courses in Spring 2002, we had to learn all the technology glitches together with our students. Most of the technical difficulties experienced by our students are Internet connection problems with AOL, proper plug-ins downloads, website access during peak Internet traffic hours, Internet connection shut-down during the test, computer crashes, and others. When taking tests or doing tutorial exercises, students don't follow instructions to enter math symbols properly or answers in the required form, or the computer does not recognize nor give credits to the correct answers.

Common problems that we have experienced with are the change of email or home address without notice, incompatible word processors, and lost emails. When assignments in Microsoft Word are sent out in emails as attachments, students using other word processors may not be able to open the attachments. We have to convert documents in Microsoft Word to PDF files and attach in both forms. Occasionally, students will complain that they have not received emails from us. We found out that if they set up their email system to put all junk emails in trash, our emails may have gotten their way to the trash. If students are using email addresses that belong to their relatives, friends, and spouse, we have to advise them of the confidentiality.

Triumphs

A student with a physical disability was enrolled in the Intermediate Algebra class in Spring 2002. He is a paraplegic, paralyzed from the neck down, and wheelchair-bound. All tests and homework were administered electronically. He successfully completed the course.

A student who is a paramedic with an irregular work schedule could not take classes on campus. He had done well in the online Intermediate Algebra course in Spring 2002 and now he is currently in the online College Algebra course. He will enroll in the online Trigonometry course in Spring 2003.

Appendices

I. Information Sheet

II. Course Syllabus

III. Advising Guidelines for Students Taking Developmental Mathematics Courses with Alternative Form of Instruction

IV. FAQ

V. Writing Assignment

VI. Grade Record Keeping Sheet

VII. Competency Lists

VIII. Evaluation result and summary

IX. Student Evaluation of Online Developmental Math Course

X. Student Comments

Appendix I

A. Information Sheet for PreAlgebra using ALEKS

Welcome to Your Online Course!

This information sheet will answer some of the questions you may have about HACC and your course. I encourage you to share with us your ideas and suggestions for changes and improvements. Your input is important to us!

General Course Information – MATH 010
Spring Term (January 10 – May 10, 2002)

How do I view my syllabus online before the course begins?

Your course syllabus can be found at the HACC Web site—http://www.hacc.edu. Click on "Distance Education Spring 2002" on the rotating icon on the home page, scroll down, and then click on the link "Online Courses Spring 2002". Select your course, and then click on the syllabus link in the course description.

How do I access my course material online?

You will be able to access your course material online once the semester begins on **January 10, 2002**. You will not be able to logon to the course before that date. If you registered within three business days of the start of the semester, it may take several more days before you are able to logon to the course.

Once the semester begins, go to the HACC Web site—http://www.hacc.edu. Click on "On Line Student Here". Select this course, Math 010. It will link you to the Web site for the course – www.highed.aleks.com. You will need an access code to get into the course. The access code is included with your text. The instructor's access code is

XXXXXXX

Once you purchase the textbook, which is bundled with your access code and plug-in installation information, please follow the instructions to download the plug-in program. The plug-in program will allow you to log onto ALEKS and assess the course material during the semester. Before the semester begins on **January 10, 2002**, you may follow the instructions to log on as "be a guest". ALEKS will give you a 24-hour password to assess the package.

If you cannot get into the course on or after **January 10, 2002**, please contact your instructor. Your instructor may need to authorize your access to course materials, especially if you registered late.

How do I get my books, and when will they be available?

Books and video materials will be available at campus bookstores beginning the week of January 2. Please visit the bookstore at the campus where you registered for the course. If you are unable to come to campus to obtain your textbooks, you can order them through HACC's new online bookstore. Go to the website: http://bookstore.hacc.edu. Click on the "Textbooks" button near the top of the page, then click on the link "Wildwood Spring 2002". Select your course discipline from the pull-down list or type in your course search information. Under the Course ID, you will need to include "internet" after the number to designate that it is an Internet course if you are doing a search. The search results will show the course CRN in the Section ID field.

Do I need to be logged onto the computer at special times?

No, you may assess course material at the ALEKS web site any time.

What if I am physically unable to come to campus for scheduled exams?

If your course has on-campus exams scheduled, and you cannot come to one of the campus locations to take your exam, you will need to make your instructor aware of this situation and secure a qualified proctor with the instructor's permission. A test proctor form must be completed and mailed to the Distance Education Office for approval two weeks prior to your requested test date. The form will be forwarded to your instructor for approval. You can download a test proctor form from the Distance Education web pages: www.hacc.edu/programs/disted/disted.cfm. Click on the link Test Proctor Form. You will need Adobe Acrobat Reader to view the file. Print out the form and follow the instructions on the form. If you would like a form mailed to you, contact the Distance Education Office.

Who do I contact if I have problems accessing my course material online?

The ALEKS corporation will provide technical help for problems related to the site. In any event, please contact your instructor for any recurring problems. Give your full name, social security number, and email address. If your instructor is unable to help you, or you need immediate assistance, contact the College's Computer Help Desk.

Who do I contact if I have questions?

If you have questions about the content of your particular course, email or call your instructor. If your concern or question is more general in nature, contact the Distance Education Office. After office hours, or if no one is available, please leave a detailed message. Include your full name, social security number, course you are taking, instructor's name, and a phone number and times you will be available.

Can I use the College's library and other facilities?

As a HACC student, you may use the library, gym, Learning Center, Career and Transfer Center, computer labs, etc. Please take advantage of the resources available to you. Information on

most of these facilities can be found at the HACC website (http://www.hacc.edu). Some of these facilities - including the library and computer labs - will require that you show your HACC Student ID before you will be allowed to use the facilities. If you are interested in using online library resources, please call the Wildwood Campus Library's reference desk for instructions. See the enclosed sheet that highlights the services available to you through the library.

How do I obtain a Student Identification Card?

The Safety & Security Office issues Student Photo ID Cards. You will need to show your class schedule to obtain the card. You may call the Safety & Security Office if you have any questions.

Good luck with your course!

Appendix I

B. Information Sheet for Beginning Algebra using MyMathLab

Welcome to Your Online Course!

This information sheet will answer some of the questions you may have about HACC and your course. I encourage you to share with us your ideas and suggestions for changes and improvements. Your input is important to us!

General Course Information – MATH 020
Fall Semester (August 19 – December 6, 2002)

How do I view my syllabus online before the course begins?

Your course syllabus can be found at the HACC Web site—http://www.hacc.edu. Click on "Distance Education Fall 2002" on the rotating icon on the home page, scroll down, and then click on the link "Online Courses Fall 2002". Select your course, and then click on the syllabus link in the course description.

How do I access my course material online?

You will be able to access your course material online once the semester begins on **August 19, 2002**. You will not be able to logon to the course before that date. If you registered within three business days of the start of the semester, it may take several more days before you are able to logon to the course.

Once the semester begins, go to the HACC Web site—http://www.hacc.edu. Click on "On Line Student Here". Select this course, Math 020. It will link you to the Web site for the course – www.MyLabMath.com. You will need a student access code to get into the course. The student access code is included with your text. You will also need the course ID:

xxxxx

Your textbook is bundled with your access code and a CD-rom with "Getting Started" information. **Be sure to click the correct textbook first before starting the registration process.** Please follow the instructions **to register and** to install components required to use MyMathLab. This will allow you to log onto MyMathLab and assess the course material any time during the semester.

If you cannot get into the course on or after **August 19, 2002**, please contact your instructor. Your instructor may need to obtain authorization for your access to course materials, especially if you registered late.

How do I get my books, and when will they be available?

Books and video materials will be available at campus bookstores beginning the week of August 2. Please visit the bookstore at the campus where you registered for the course. If you are unable to come to campus to obtain your textbooks, you can order them through HACC's new online bookstore. Go to the website: http://bookstore.hacc.edu. Click on the "Textbooks" button near the top of the page, then click on the link "Wildwood Fall 2002". Select your course discipline from the pull-down list or type in your course search information. Under the Course ID, you will need to include "intrnt" after the number to designate that it is an Internet course if you are doing a search. The search results will show the course CRN in the Section ID field.

Do I need to be logged onto the computer at special times?

No, you may assess course material at the coursecompass.com web site any time after completing the registration process.

What if I am physically unable to come to campus for scheduled exams?

If your course has on-campus exams scheduled, and you cannot come to one of the campus locations to take your exam, you will need to make your instructor aware of this situation and secure a qualified proctor with the instructor's permission. A test proctor form must be completed and mailed to the Distance Education Office for approval two weeks prior to your requested test date. The form will be forwarded to your instructor for approval. You can download a test proctor form from the Distance Education web pages: www.hacc.edu/programs/disted/disted.cfm. Click on the link Test Proctor Form. You will need Adobe Acrobat Reader to view the file. Print out the form and follow the instructions on the form. If you would like a form mailed to you, contact the Distance Education Office.

Who do I contact if I have problems accessing my course material online?

The Addison-Wesley corporation will provide technical help for problems related to the site. You may contact through their toll-free number at 1-800-677-6337 (M-F, 9 AM-6PM, EST) or email address at support@coursecompass.com. In any event, please contact your instructor for any recurring problems. Give your full name, social security number, and email address. You must include "Internet Math 020" in the message line.

Who do I contact if I have questions?

If you have questions about the content of your particular course, email or call your instructor. If your concern or question is more general in nature, contact the Distance Education Office. After office hours, or if no one is available, please leave a detailed message. Include your full name, social security number, course you are taking, instructor's name, and a phone number and times you will be available.

Can I use the College's library and other facilities?

As a HACC student, you may use the library, gym, Learning Center, Career and Transfer Center, computer labs, etc. Please take advantage of the resources available to you. Information on

most of these facilities can be found at the HACC website (http://www.hacc.edu). Some of these facilities - including the library and computer labs - will require that you show your HACC Student ID before you will be allowed to use the facilities. See the enclosed sheet that highlights the services available to you through the library.

How do I obtain a Student Identification Card?

The Safety & Security Office issues Student Photo ID Cards. You will need to show your class schedule to obtain the card.

Good luck with your course!

Appendix II

A. Course Syllabus for PreAlgebra

COURSE: Math 010 Pre-Algebra, 3-Credit Mathematics Course

INSTRUCTOR: O. Pauline Chow, Professor of Mathematics
717-780-2504, opchow@hacc.edu

DIVISION: Mathematics, Science, & Allied Health (MSAH)

COURSE DESCRIPTION AND OVERVIEW: Designed to review the basic operations of arithmetic and introduce algebraic representations and applications. Prerequisite: English 001 for students required to take Reading by the College Testing and Placement Program.

LEARNING OUTCOMES:

1. Demonstrate a good foundation in basic arithmetic skills.
2. Show a new or restored confidence in the ability to do mathematics.
3. Demonstrate and understand basic algebraic skills.

REQUIRED MATERIALS:

Text: ALEKS Worktext for Prealgebra, by Donald Hutchison, Barry Bergman, & Louis Hoelzle, McGraw Hill, with accompanying ALEKS User's Guide.
ISBN 0-07-245025- 8 (bundle)

SYSTEM REQUIREMENTS (Minimum):

Hardware: Pentium processor of 133 MHz or more or any Pentium II or III
At least 32 MB of RAM
Dialup modem (at least 28k)
Monitor (SVGA 640 x 480 x 256 colors)
CD ROM drive (2x or faster)

Software: Windows 95, 98, NT 4.0 or higher
Office 97 or Microsoft Word
Web browsers compatible with ALEKS: Netscape Communicator 4.5 or higher, Internet Explorer 4.0 or higher.
Email address

Internet Access: ALEKS is used over the World Wide Web
For AOL users, must use AOL 4.0 or higher

COURSE ASSIGNMENTS:

Slice 1 – Whole Numbers

1.1-1.4	Translation
1.5-1.6	Rounding
1.7-1.13	Addition and Applications
1.14-1.18	Subtraction and Applications
1.19-1.22	Multiplication
1.23-1.28	Division
1.29-1.30	Order of Operations
1.31-1.34	Applications
1.35-1.38	Factors, Greatest Common Factors, Least Common Multiples

On-line test #1 on Slice 1 – January 30, 2002

Slice 2 – Signed Number and Variables

2.1-2.4	Addition and subtraction
2.5-2.6	Multiplication
2.7-2.9	Division
2.10	Absolute Value
2.11-2.12	Applications
2.13-2.16	Properties

Proctored test #2 on Slices 1 and 2 – February 16, 2002

Slice 3 – Fractions and Mixed Numbers

3.1-3.6	Multiplying Whole Numbers and Fractions
3.7-3.8	Multiplying Mixed Numbers
3.9-3.11	Reciprocals and Dividing Fractions
3.12-3.14	Adding Fractions
3.15-3.17	Subtracting Fractions
3.18-3.22	Applications

On-line test # 3 on Slice 3 – March 4, 2002

Slice 4 – Decimals

4.1-4.4	Adding and Subtracting Decimals
4.5-4.8	Multiplying Decimals
4.9-4.12	Dividing Decimals
4.13	Applications
4.14-4.15	Decimals as Fractions and Repeating Decimals

Proctored test # 4 on Slices 3 and 4 – March 30, 2002

Slice 5 – Linear Equations

5.1-5.2	Multiplication Property
5.3-5.5	Solving a Linear Equation: Problem Type 1, 2, 3
5.6-5.9	Solving a Linear Equation with Several Occurrences of the Variable: Problem Type 1, 2, 3
5.10-5.12	Applications

5.13-5.14 Reading and Plotting a Point in the Coordinate Plane
5.15-5.16 Solutions to a Linear Equation in Two Variables
On-line test #5 on Slice 5 – April 17, 2002

Slice 6 – Proportion, Percent, and Rational Expressions

6.1-6.2 Applications
6.3-6.6 Percents
6.7-6.10 Applications on Percentage
6.11-6.13 Operations on Rational Expressions
Proctored Final Exam – Comprehensive final on slices 1-6 with emphasis on Slices 5 & 6 on May 4, 2002

SPECIAL ASSIGNMENTS: Four or five required homework assignments will be posted with due dates announced one week before the submission. Late submissions will **not** be accepted.

GRADING POLICIES: The final percentage will be determined by dividing the total number of points earned by the total number of possible points. The following scale will be used to assign the final grade: A=90-100%, B=80-89%, C=70-79%, D=60-69%, and F=0-59%. In addition, please refer to the College Catalog for information concerning the specific conditions under which a grade of 'W' can be assigned.

Three On-line tests (@ 50 points each)	= 150 points
Two proctored exams (@ 150 points each)	= 300 points
Take-home assignments (total)	= 80 points
ALEKS activities (total)	= 60 points
Proctored Final Examination	= 250 points
Total	= 840 points

EXAMINATIONS: On-line tests, as well as comprehensive midterms and final examinations, will be given. Students are expected to log on to the ALEKS web site to participate in the assigned activities. Details will be furnished at the start of the semester. The dates for each test and exam, as well as the chapters to be tested, are posted above. In addition, four or five required homework assignments may be given throughout the semester. Due dates will be posted one week before the submission. **NO homework** will be accepted after the due date. When a student fails to take the on-line test(s) or proctored exam(s) on the day it is given, **no make up will be given unless the student has notified the instructor by phone or email before the day of the test/exam.** The make-up test **must be rescheduled and taken within one week**. With the instructor's permission and within the scheduled time, students may take the make-up test at the Test Center during the operating hours at all campuses. Make-up tests are always harder and bonus problems will not be included. **Only one make up per student per semester will be given. NO EXCEPTIONS.**

REVIEW SESSIONS: Students should log on to ALEKS for **at least two hours a week**

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for review and problem solving. In addition, tutoring is available in the Learning Center at all campuses. Students should also communicate with the instructor about their questions and/or concerns.

Other Information

1. No retests will be given to any students and test scores will not be curved nor dropped from the calculation of the course grade. Once the test is taken, that is the grade that will be counted.

2. If a student is found cheating in a test, he/she will receive a grade of zero for the test. If cheating is repeated, he/she will receive a grade of F for the course.

3. In order to succeed in this course, students are expected to do the assigned homework, logon to ALEKS website and participate in the activities. Through ALEKS message system, students should send a weekly progress report to the instructor about their progress, comments, questions, and/or concerns. During normal school days, the instructor will address all questions/concerns within 24 hours period. It may take longer time during weekend and/or holidays.

4. I will post my office hours at the start of the semester.

Good Luck!

Appendix II

B. Course Syllabus for Beginning Algebra

COURSE: Math 020 Beginning Algebra (Fall 2002), 3-Credit Mathematics Course

INSTRUCTOR: O. Pauline Chow, Professor of Mathematics
717-780-2504, opchow@hacc.edu

DIVISION: Mathematics, Science, & Allied Health (MSAH)

COURSE DESCRIPTION AND OVERVIEW: Designed to develop basic algebraic skills through a study of fundamental properties of numbers, fundamental operations in arithmetic and algebra, including polynomials and linear equations. Prerequisite: Placement through the College Testing and Placement Program or completing of MATH 010 with a grade of C or better.

LEARNING OUTCOMES:

1. Demonstrate the basic operations of algebra;
2. Gain confidence in the ability to do mathematics;
3. Gain the manipulative skill and understanding of basic algebra to facilitate the advancement to subsequent mathematics

REQUIRED MATERIALS:
Text: Introductory Algebra, by Lial, Hornsby, and McGinnis, Seventh Edition, Addison Wesley Longman, with accompanying MyMathLab.

SYSTEM REQUIREMENTS (Minimum):

Computer:	Pentium Multimedia PC
Operating System:	Windows 95, 98, NT, or 2000
Memory:	32 MB (minimum) or 64 MB RAM (recommended)
Internet Connection:	Cable/DSL/T1 or other high–speed connection (recommended for multimedia textbook) 56K modem (minimum)
Web browser:	Internet Explorer 5.0 **(recommended)** America Online browser **not** supported Netscape Navigator 4.7 (Netscape Navigator 6.0 **not** supported)
Monitor resolution:	1024 x 768
Plug-ins:	Follow the instructions in MyMathLab.com to download the required Plug-ins
Software:	Office 97 or Microsoft Word
Email address:	Current and valid Email address throughout the semester

COURSE ASSIGNMENTS:

Chapter 1 – The Real Number System

1.1-1.8 Review the Real Number System and the Order of Operations.

On-line test #1 from coursecompass.com on Chapter 1 – August 30, 2002*

Chapter 2 – Equations, Inequalities, and Applications

2.1 The Addition Property of Equality
2.2 The Multiplication Property of Equality
2.3 More on Solving Linear Equations
2.4 An Introduction to Applications of Linear Equations
2.5 Formulas and Applications from Geometry
2.6 Ratio, Proportion, and Percent
2.7 Solving Linear Inequalities

Proctored test #1 on chapters 1 and 2 – September 21, 23, or 24, 2002*

Chapter 3 – Graphs of Linear Equations and Inequalities in Two Variables

3.1 Reading Graphs; Linear Equations in Two Variables
3.2 Graphing Linear Equations in Two Variables
3.3 Slope
3.4 Equations of Lines

On-line test # 2 from coursecompass.com on chapter 3 – October 11, 2002*

Chapter 4 – Exponents and Polynomials

4.1 Adding and Subtracting Polynomials
4.2 The Product Rule and Power Rules for Exponents
4.3 Multiplying Polynomials
4.4 Special Products
4.5 Integer Exponents and the Quotient Rule
4.6 Dividing a Polynomials by a Monomial
4.7 The Quotient of Two Polynomials
4.8 An Application of Exponents: Scientific Notation

Proctored test # 2 on Chapters 3 and 4 – October 26, 28, or 29, 2002*

Chapter 5 – Factoring and Applications

5.1 Factors; The Greatest Common Factor
5.2 Factoring Trinomials
5.3 Factoring Trinomials by Grouping
5.4 Factoring Trinomials Using FOIL
5.5 Special Factoring Techniques
5.6 Solving Quadratic Equations by Factoring
5.7 Applications of Quadratic Equations

On-line test #3 from coursecompass.com on chapter 5 – November 15, 2002

Chapter 6 – Rational Expressions and Applications

6.1 The fundamental Property of Rational Expressions

6.2 Multiplying and Dividing Rational Expressions
6.3 Least Common Denominators
6.4 Adding and Subtracting Rational Expressions
6.5 Complex Fractions
6.6 Solving Equations with Rational Expressions
6.7 Applications of Rational Expressions

Chapter 7 – Systems of Equations and Inequalities

7.1 Solving Systems of Linear Equations by Graphing
7.2 Solving Systems of Linear Equations by Substitution
7.3 Solving Systems of Linear Equations by Elimination
7.4 Application of Linear Equations

Proctored Final Exam – Comprehensive Departmental Common Final Examination on chapters 1-7 on December 7, 9, or 10, 2002*

* On-line tests will be scheduled within the coursecompass.com. Details will be provided at the start of the semester. The proctored examinations are 2-hour pencil and paper examinations. Students are responsible to check the Fall 2002 test dates and times posted by the Distance Education Office for different campuses. Students must notify the instructor when and where they will take the test.

SPECIAL ASSIGNMENTS: Required homework assignments will be posted with due dates announced one week before the submission. Late submissions will **not** be accepted.

GRADING POLICIES: The final percentage will be determined by dividing the total number of points earned by the total number of possible points. The following scale will be used to assign the final grade: A=90-100%, B=80-89%, C=70-79%, D=60-69%, and F=0-59%. In addition, please refer to the College Catalog for information concerning the specific conditions under which a grade of 'W' can be assigned.

Three On-line tests from coursecompass.com (@ 50 points each)	= 150 points
Two proctored exams (@ 150 points each)	= 300 points
Take-home assignments (total)	= 150 points
Proctored Final Examination	= 250 points
Total	= 850 points

EXAMINATIONS: Three on-line tests from the coursecompass.com web-site, two proctored pencil and

paper examinations and a common departmental final examination will be given. Students are expected to log on to the coursecompass.com web-site to check the **announcements** and **study schedules** posted regularly throughout the semester, participate in the assigned activities such as **Discussion Board**, and use the resources such as **video clips**, **multimedia features**, **practice problems**, **worked-out examples**, **guided solutions**, and **sample tests**. Details will be furnished at the start of the semester. The dates for each assessment and exam, as well as the chapters to be tested, are posted above. In addition, six or seven required homework assignments will be given

throughout the semester. Due dates will be posted one week before the submission. **NO homework assignment** will be accepted after the due date. When a student fails to take the on-line test(s) or proctored exam(s) on the day it is given, **no make up will be given unless the student has notified the instructor by phone or email before the day of the test/exam.** The make-up test **must be rescheduled and taken within one week**. With the instructor's permission and within the scheduled time, students may take the make-up test at the Test Center during the operating hours at *all* campuses. Make-up *tests are* always harder and bonus problems will not be included. **Only one make up per student per semester will be given. NO EXCEPTIONS.**

TUTORING: Tutoring is available in the Learning Center at all campuses. Students should also communicate with the instructor about their questions and/or concerns.

BEST COPY AVAILABLE

Appendix III

Advising Guidelines for Students Taking Developmental Mathematics Courses with Alternative Form of Instruction

1. Students need to meet all pre-requisite requirements. Proper placement in the course is vital to success in the course.

2. Students taking these courses have to be highly self-disciplined, self-motivated, focused, on-task, and schedule oriented.

3. Students with prior record of not doing well in the previous course(s) should be advised to take the traditional lecture type course. Students with marginal mathematical experience are not likely to improve their experience and succeed with less instruction.

4. Alternative developmental mathematics courses cover the same amount of material as in the regular courses. A larger commitment of time is required because students do not have the advantage of in class instruction.

5. Computer testing is counted no more than 20% towards the course grade. Students are required to do pencil and paper proctored tests and comprehensive final examinations on campus.

6. Students must have access to a computer with internet connection.

Appendix IV

Online Mathematics Courses for Fall 2002
Frequently Asked Questions

How do I get the course syllabus?

You should have received a copy of the course syllabus from the Distance Education Office. If not, go to www.hacc.edu, click on the "Distance Education" rotating banner, locate and click on "Online Courses for Fall 2002", locate and click on the name of your math course on the left hand column, click "syllabus", and print a hard copy of the syllabus.

What is in the course syllabus?

The course syllabus includes information about the course and the instructor, system requirements, required textbooks, course outline, test schedule, grading policy, and exam and make-up test policy.

How do I get and submit the homework assignments?

Homework assignments for submission will be either posted within the course website or sent as an attachment to your email address. Homework assignments are usually Microsoft Word 7.0 documents. For submission, you may send the assignments using Word or other word processes, such as Notepad or Wordpad electronically to the instructor as an attachment. For those who have problems with the word process, you may paste the work to the body of the email and send it electronically. An alternative is to send the assignments through postal mail to the college address on or before the due date. An acknowledgement of the receipt of the assignment will be sent to you electronically.

When I will receive feedback from the instructor? When will the assignment be returned to me?

After the homework assignment is graded, the grade will be sent to you electronically. The assignment with comments will be returned electronically to you or mailed to your home address.

What is the difference between the online and proctored tests?

Online tests are tests taken using your home or work computer. Proctored tests are pencil and paper tests taken at your college campus. One week before the scheduled test, information and/or the suggested study plan will be sent to you or posted in the website.

On the scheduled day(s) for the online test, students using MyMathLab (Math 020 and 103) will log onto the www.coursecompass.com website and take the timed test. You may review the test results either after the test or after the expiration of the test.

For students using ALEKS, a different format is used to report the grade for the online tests. Since ALEKS will continuously assess your progress and build the piechart for you, all students must complete all problems assigned to the specified slice(s) by a certain date. By midnight of the set date, the grade for the online test will be calculated based on the grade shown next to the slice in ALEKS.

As for the proctored tests, students must inform the instructor of their time, date, and campus preference. The Distance Education Office will handle the proctoring. Students who have special needs must make arrangements with the Special Needs Services. Students must show a picture ID for verification when taking the proctored tests.

When will I receive my grade after the test(s)?

At least 5 days after the scheduled test, you will be notified of your grade electronically. Copy of the proctored pencil and paper test with comments and feedback will be mailed to your home address.

How can I get help for questions and/or concerns?

You may contact the instructor through email. During the posted office hours, you may call or visit in person.

The College also provides walk-in tutoring services at the campus learning center. Please check their hours for the semester. There is also an online tutoring services provided by Prentice Hall publishing co. Please go to www.hacc.edu and check out the details. For students using MyMathLab, there is a tutor center within the website.

What are the instructor's office hours for the semester?

Office hours will be posted at the beginning of the semester.

How fast will the instructor respond to my email? Phone call?

During the semester, the turn around time to respond to emails and phone calls is about 24 hours from Mondays to Fridays, 48 hours on weekends, and ASAP during Thanksgiving holidays.

What do I need to include when sending emails to the instructor?

On the subject line of the email, you should include the purpose of the email and the **course name**. For example, if you want to submit the first homework assignment and you are in my online math 010 course, then you type "online math 010 – first assignment" on the subject line.

You should always sign off with "your name" at the bottom of the email. This way you have helped me to organize my email collections. Please always let me know of any changes in your personal information, such as email address, home address, and phone number during the semester.

How often I should log on to the course website? How do I study for this online math course?

Since little or no instruction will be provided by the instructor, you have to study from the textbook and use the resources in the website. First, you should always read the chapter(s) according to the course schedule, do the exercises in the sections, and take the chapter test.

For students using MyMathLab, you log on to www.coursecompass.com website. In each chapter, there are video clips and multimedia presentations for some chosen topics/concepts for comprehension, practice problems for drill-practice, guided solutions, work-out examples, and study plans. To help prepare for the tests, you may take the sample tests in the site and check your own progress.

For students using ALEKS, you should go over the exercises in the specified Slice in the worktext according to the course schedule. Then go to the ALEKS website to do the problems in the site. ALEKS will assess your progress continuously and track your log-on time. You can also explore new features such as "more review" and "worksheet". Since mathematics concepts are not isolated concepts, concepts in one slice may appear in another. When your score next to the slice is not quite 100% and ALEKS says there are no more problems, you have to move on and master the concepts in the next slice. Then you may return to the previous ones and finish the problems.

In www.coursecompass.com, how do I change my personal information, such as my user name or password?

You go to the course page with the name of the course on the upper left hand side, system announcements in the middle, and "person information" at the bottom of the right hand side. Click on personal information and follow instructions.

What is the add/drop policy?

During the first week of each semester, you may add a course with an administrative signature. You may withdraw from a course and get 100% refund by the end of the first week and 50% refund by the end of the third week. You will not receive any grade if you withdraw from a course within the first three weeks of classes. Students are not allowed to withdraw from a course after the last day of class.

Hope you have a successful semester!

(Chow, 8/25/2002)

Appendix V

First Writing Assignment

Course Name
Due date:

Name: Phone (home or work):

Address:

email address:

Is this your own email address? (yes or no)

Present occupation (full/part time):

High School attended:

Are you currently a high school student? Yes or No

Major: Expected grade achieved in this course

Occupational /Educational Goals:

Be sure you have met the pre-requisite for this course. If not, you must sign an "Against Advice Form."

Please list previous math course(s) taken at HACC or other college(s) and include course grades.

List most recent course first grade earned year taken

Describe your most memorable math experience. How has this experience affected your attitude toward mathematics?

Is this your first time taking this course? Yes or No. If no, please share with us your pervious experience in taking this course.

Why are taking this course and/or this instructor?

Have you read the Advising Guidelines for taking online courses? (yes or no)

How many hours per week can you spend on doing homework or studying for this course?

Is there anything (such as work, family or other obligation) that you want us to know that may interfere with your success in this course?

Please share with us your expectations about this course.

I have read and understand your policy on withdrawal and make-up tests. I accept responsibility for my performance in this class.

Print signature

Appendix VI

Grade Record Keeping Sheet

Instructor: O. Pauline Chow, Professor of Mathematics opchow@hacc.edu HACC Fall 2002

Grade Record Sheet
for Online Math 020

	due date	Your scores	Total number of points assigned
First Writing Assignment	8/30	5	5
On-line test #1	9/8		50
Take-home #1	9/6		12
Proctored test # 1	9/21, 23, 24, 25, 26		150
Online test #2	10/13		50
Proctored test #2	10/26, 28, 29, 30, 31		150
Online test #3	11/17		50
Comprehensive Final	12/7, 9, 10, 11		250
Total			

Grading Policy:

Three Online tests @ 50 points each	= 150 points
Two Proctored tests @ 150 points each	= 300 points
Take-home assignments (total)	= 100 points
Comprehensive Final	= 250 points
Total points	= 800 points

Appendix VII

A. Competency List for PreAlgebra

HARRISBURG AREA COMMUNITY COLLEGE
MATH 010 – PRE-ALGEBRA

COURSE DESCRIPTION: Designed to review the basic operations of arithmetic and introduce algebraic representation and applications.

COMPETENCIES

I. WHOLE NUMBERS

1. Write a given number in expanded form or in words.
2. Perform operations on whole numbers.
3. Identify and apply the commutative, associative and distributive real number properties with whole number operations.
4. Round a whole number to a specific place value.
5. Estimate the result of a computation using rounding.
6. Simplify expressions with whole numbers using order of operations.
7. Evaluate algebraic expressions by substitution.
8. Solve applications by translating English word phrases into arithmetic expressions.

II. SIGNED NUMBERS

1. Apply definitions of signed numbers, opposites, and absolute value.
2. Perform operations on expressions involving signed numbers.
3. Simplify expressions with signed numbers using order of operations.
4. Identify and apply the commutative, associative and distributive real number properties with integer operations.
5. Solve applications by translating English word phrases into arithmetic expressions.

III. LINEAR EQUATIONS IN ONE VARIABLE

1. Simplify algebraic expressions by combining like terms.
2. Solve equations using addition and multiplication principles.
3. Translate English sentences into mathematical equations.
4. Solve applications by translating to linear equations.
5. Identify plane geometric figures and determine their perimeters using correct formulas.

IV. FRACTIONS

1. Identify proper and improper fractions and mixed numbers.
2. Simplify a fraction to an equivalent fraction by removing factors common to the numerator and denominator.
3. Change a mixed number to an improper fraction.
4. Change an improper fraction to a mixed number.

5. Determine the least common multiple of the denominators of two or more f fractions.
6. Convert two or more fractions to equivalent fractions with a common denominator.
7. Perform operations on expressions involving fractions and mixed numbers.
8. Simplify complex fractions.
9. Simplify expressions with fractions using order of operations.
10. Solve linear equations involving fractional coefficients.
11. Solve applications by translating to linear equations with fractional coefficients.

V. DECIMALS

1. Identify the place value and word names of decimals.
2. Write decimal numbers in expanded form.
3. Approximate decimals by rounding to a given place value.
4. Rank decimals in ascending order.
5. Perform operations on expressions involving decimals.
6. Simplify expressions with decimals using order of operations.
7. Change fractions to decimals and decimals to fractions.
8. Solve linear equations involving decimal coefficients.
9. Determine the square root of a given number using calculator.
10. Use the Pythagorean Theorem to determine the missing side of a right triangle.
11. Determine the area of geometric plane figure and the volume of a geometric solid figure.
12. Solve applications by translating to linear equations with decimal coefficients.

VI. RATIO AND PROPORTION

1. Identify ratios and rates.
2. Determine whether a proportion is true or false.
3. Solve proportions.
4. Use proportions to determine missing sides of similar geometric figures.
5. Solve applications by translating to ratios and proportions.

VII. PERCENT

1. Apply the definition of percent.
2. Change decimals to percents and percents to decimals.
3. Change fractions to percents and percents to fractions.
4. Solve applications by translating to linear equations involving percents.
5. Use formulas to calculate simple interest, compound interest, sales tax, and others.

VIII. MEASUREMENT

1. Apply definitions of U.S. and metric units of length, weight, capacity, and mass to approximate measurements.
2. Convert U.S. units from one unit to another.
3. Convert metric units from one unit to another.
4. Convert U.S. units to metric units and metric units to U.S. units given the conversion factors.
5. Convert temperature from Fahrenheit to Celsius and Celsius to Fahrenheit.

Appendix VII

B. Competency list for Beginning Algebra

HARRISBURG AREA COMMUNITY COLLEGE
MATH 020 – BEGINNING ALGEBRA

COURSE DESCRIPTION: Designed to develop basic algebraic skills through a study of fundamental properties of numbers: fundamental operations in arithmetic and algebra, including polynomials and linear equations.

COMPETENCIES

I. INTRODUCTION TO REAL NUMBERS AND ALGEBRAIC EXPRESSIONS

1. Simplify expressions using order of operations.
2. Evaluate algebraic expressions by substitution.
3. Translate phrases to algebraic expressions.

II. LINEAR EQUATIONS AND INEQUALITIES

1. Determine whether a given number is a solution of a given equation.
2. Explain the concept of equivalent equations.
3. Solve equations with real number coefficients using the addition and multiplication principles.
4. Solve applications by translating to equations.
5. Solve formulas for a specified variable.
6. Solve linear inequalities in one unknown and write solutions using interval notation.
7. Solve applications by translating to linear inequalities.

III. POLYNOMIALS

1. Determine the degree and classification (monomial, binomial, trinomial, etc.) and write a polynomial in descending order.
2. Use the laws of integer exponents to simplify algebraic expressions.
3. Add and subtract polynomials.
4. Multiply polynomials.
5. Divide polynomials with monomial divisors.
6. Divide polynomials with polynomial divisors using long division.
7. Solve applications involving scientific notation.

IV. FACTORING

1. Factor greatest common factor from polynomials.
2. Factor four-term polynomials using grouping method.
3. Factor difference of squares.
4. Factor trinomials of the form $x^2 + bx + c$ and $ax^2 + bx + c$.
5. Factor perfect square trinomials.
6. Solve quadratic equations by factoring.

7. Solve applications by translating to polynomial equations.

V. RATIONAL EXPRESSIONS AND EQUATIONS

1. Simplify rational expressions.
2. Multiply and divide rational expressions.
3. Add and subtract rational expressions.
4. Simplify complex rational expressions.
5. Determine number(s) for which a rational expression is undefined and solve equations involving rational expressions.
6. Solve applications by translating to equations involving rational expressions.

VI. GRAPHS OF LINEAR EQUATIONS IN TWO VARIABLES

1. Plot points using the rectangular coordinate system.
2. Determine solutions of linear equations.
3. Graph the solution set of a linear equation.
4. Determine the intercepts and the slope of a line.
5. Determine whether two lines are parallel, perpendicular, or neither using slopes.

VII. SYSTEMS OF LINEAR EQUATIONS

1. Solve systems of two linear equations graphically.
2. Solve systems of two linear equations using the substitution method.
3. Solve systems of two linear equations using the elimination (addition) method.
4. Solve applications by translating to systems of equations.

(4/4/2001)

Appendix VII

C. Competency list for Intermediate Algebra

HARRISBURG AREA COMMUNITY COLLEGE
MATH 051 – INTERMEDIATE ALGEBRA

COURSE DESCRIPTION: Designed to augment the knowledge of the student who has limited background in algebra: fundamental operations, special products and factors, functions and fractional equations, exponents, radicals, quadratic equations.

COMPETENCIES

I. SOLVING LINEAR EQUATIONS AND INEQUALITIES

1. Solve linear equations with real number coefficients.
2. Solve applications by translating to equations: distance-rate-time, percent, interest, and sales and discount problems.
3. Solve formulas for a specified variable.
4. Solve inequalities and write solutions using interval notation.
5. Solve applications by translating to inequalities.
6. Solve absolute value equations.
7. Solve absolute value inequalities and write solutions using interval notation.

II. CORRESPONDENCES, RELATIONS AND FUNCTIONS

1. Write a correspondence as a relation.
2. Determine the domain and the range of a relation.
3. Determine whether a relation is a function.
4. Evaluate functions.
5. Graph simple functions using table of values.
6. Determine whether a graph represents a function.
7. Determine the domain of a function given by a formula.

III. GRAPHS OF LINEAR EQUATIONS AND INEQUALITIES

1. Graph linear functions and equations.
2. Given two points of a line, determine the slope.
3. Determine the slope of a line from an equation.
4. Solve applications involving the slope.
5. Given characteristics of a line, determine its equation.
6. Determine whether the graphs of two lines are parallel, perpendicular or neither.
7. Determine an equation of the line parallel (or perpendicular) to given line containing given point.
8. Determine the equation of a linear function fitting two data points and use it to make predictions.
9. Given the graph of a line, interpret the intercepts and slope and determine its equation.

IV. SYSTEMS OF LINEAR EQUATIONS

1. Solve systems of two linear equations graphically.
2. Solve systems of two linear equations using substitution and elimination methods.
3. Solve applications by using systems.
4. Solve systems of three linear equations using elimination method.

V. POLYNOMIALS

1. Factor binomials with difference and sum of two cubes.
2. Factor polynomials using grouping methods.
3. Factor polynomials with multi-steps.

VI. RATIONAL EXPRESSIONS AND EQUATIONS

1. Simplify rational expressions.
2. Perform operations on rational expressions and simplify.
3. Simplify complex rational expressions.
4. Determine number(s) for which a rational expression is undefined and solve equations involving rational expressions.
5. Solve applications and formulas.

VII. RATIONAL EXPONENTS, RADICAL EXPRESSIONS, AND EQUATIONS

1. Use the laws of exponents with rational exponents.
2. Express radical expressions using rational exponents.
3. Perform operations on algebraic expressions involving radicals.
4. Solve equations involving radicals and rational exponents.
5. Solve applications involving powers and roots.
6. Express complex numbers as a + bi.
7. Perform operations on complex numbers.

VIII. QUADRATIC EQUATIONS

1. Solve quadratic equations by factoring.
2. Solve quadratic equations by completing the square.
3. Solve quadratic equations using the quadratic formula.
4. Determine approximate solutions using a calculator.
5. Graph quadratic functions.
6. Solve applications involving quadratic equations.
7. Solve formulas for a given variable.

(4/4/2001)

Appendix VIII

Internet Math 010 Prealgebra
Spring 2002

Summary

Chow taught one section of the internet Prealgebra. Eleven students took the Math 010 PreAlgebra common final exam. The exam questions were developed using the competency list. In general, students did not do as well in this common final exam because six problems (volumes and units conversion) were not stressed enough in the ALEKS worktext. In addition, students usually do not do well in verbalizing properties and rules. So, a number of students missed the true/false questions. However, the good news is that there were 29 out of 50 questions answered correctly by at least 73% of the students.

There were 15 students enrolled at the beginning of the semester. One student withdrew in early February, one withdrew in late April, one did not respond since mid-February, and one did not take the final exam. Eleven students took the final exam with 9 earning a grade of C or better and 2 earning a grade of D. The success rate of completing this class with a grade of at least a C is 60% of the initial enrollment or 82% of those who took the final exam. One recommendation is to give better advice to students who want to enroll in Internet developmental math courses.

The textbook used in this Internet Math 010 PreAlgebra is "ALEKS Worktext for Prealgebra", by Hutchison, Bergman, and Hoelzle, McGraw-Hill. The accompanying website is the ALEKS website which is an artificial intelligence-based system for individualized math learning. Students are required to log onto the site for practice problems and periodic required assessments throughout the semester. ALEKS course management system provides comprehensive progress, grade, and logon time reports.

Internet Math 051 Intermediate Algebra
Spring 2002

Summary

Chow taught a section of the traditional Math 051 and team-taught, with Shutters, a section of the Internet Math 051 in Spring 2002. Students in both sections took the departmental common final exam. Over 50% of the students from both sections made similar mistakes in problems in solving inequalities with absolute values, in identifying horizontal and vertical lines, simplifying complex fractions, and verbalizing properties and rules. Students taking the Internet class did better in 24 out of 50 questions than those in the traditional class.

In the traditional class, there were 30 students enrolled at the beginning of the semester. Two students withdrew on 4/22/2002 and one on 5/4/2002, each with a grade of W. Two students stopped attending the class since mid-April and did not take the final exam. Out of the twenty-five students who took the final exam, 18 earned a grade of C or better, 5 earned a grade of D,

and 2 failed the course. The success rate of completing the course with a grade of at least a C or better is 60% of the initial enrollment or 72% of those who took the final exam.

In the Internet class, there were 21 students enrolled at the beginning of the semester. Five students withdrew in early February, 2 in early March, and 2 in mid-April. Three students stopped responding. One student took a Y grade. Eight students took the final exam and all earned a grade of C or better. The success rate of completing the course with a grade of at least C or better is 38% of the initial enrollment or 100% of those who took the final exam.

In conclusion, the remaining 8 students in the Internet class did better in the common final because they "remained" as the dedicated and self-disciplined students. One recommendation is to give better advice to students who want to enroll in Internet developmental math courses. On the other hand, a higher retention rate is achieved in the traditional class.

Both classes used the "Intermediate Algebra", by Lial and Hornsby, Addison Wesley Longman. The accompanying website is MyMathLab. Internet students were required to participate in Discussion Board and 3 online tests set up by the instructors throughout the semester. The traditional students were required to take 3 online tests set up by the instructor and encouraged to use other features in the website.

Appendix IX

Student Evaluation of the On-line Development Math Courses

Math _____Semester _____

Your participation in the evaluation of this course is greatly appreciated. It will take about 20 minutes to respond to the questionnaire. **Please answer each question as completely as possible.** All **free wheeling and candid comments/suggestions rather than yes/no answers** will help to improve the delivery of this course. All results will be shared with the Division Dean. Please return this survey by _____, **2002** to: **Instructor** or email the document as an attachment to: **instructor@xxcc.edu**. **Thank you for your participation.**

1. Why do you want to take this course on-line?

2. In hindsight, do you believe now that you have made the right decision to enroll in this course?

3. What types of problems have you experienced in using the course web-site? Please make comment for each item.

    a. first time installation
    b. following instruction
    c. technical help from the publisher
    d. access to the site
    e. access to different components in the site
        i. practice exercises
        ii. message center
        iii. progress report
        iv. new feature - review
        v. new feature - worksheet
        vi. help
    f. others

4. When you ran into difficulties with the material in this online course, how valuable did you find the following?

    a. reading the worktext
    b. resources in the course web-site
    c. getting help from learning center
    d. getting help from the instructor

5. Since this on-line course has little or no formal instructions, how valuable do you find the following mechanism set up by the instructor?

    a. homework assignments

b. lecture notes from the instructor(s)
c. others

6. Please share your experiences in the following areas.
   a. communication with the intructor(s)
      i. email
      ii. postal mail
      iii. voice mail
   b. scheduled proctored tests
      i. location
      ii. time
      iii. date
      iv. arrangement
   c. scheduled on-line tests from the website
      i. dates of availability
      ii. time limit
      iii. others
   d. instructor's office hours
   e. others

7. What is your overall assessment of the textbook and course web-site chosen for this course?

8. What are the strengths and weaknesses of the course web-site package?

9. Name three areas that you like most about course web-site and three areas that you don't like about course web-site. In the areas that you don't like, please include suggestions for improvements.

10. What is your overall assessment of your achievement in this course?

11. Are you going to take another on-line math course in the next semester? Why or Why not?

12. What is your overall assessment of this on-line development course? Should we continue to offer it? Please include suggestions for any changes.

13. What advice would you give to future students so that they will be successful in taking on-line math courses?

Thank you for your participation. Your generous comments and suggestions will help to improve the course.

Appendix X

A. Student Comments on Math 010 PreAlgebra

9. Name three areas that you like most about ALEKS and three areas that you don't like about ALEKS. In the areas that you don't like, please include suggestions for improvements.

I liked the online explanations, the practice modes and the fact that you could see what you needed help with. I didn't like the textbook- it wasn't very demonstrative. I can't think of anything else I didn't like.

Didn't stick to only one or two slices on web site. Instructor should be able to make only the slices available that we are working on.
I loved the exercises in the worktext.
I like the rest of the site.

For what I don't like, please see #8. For what I liked – easy accessibility, alternative explanation feature for solving problems, and the review feature.

LIKES	DISLIKES
1- Homework Text	1- No communication with students – have a chatroom ???
2- Homework Progression	2- On-line assessments – advise what we had right or wrong?
3 – Message Board	3- The pie chart was not easily understood, however, I know now

Like: 1) Can access & work anytime of day or night. 2) You could access definitions & build a study guide by printing out.

ALEKS – 1. book – need more examples w/ written notes. 2. Website – more notes now did # get to there, why did, where to put #, what happens when you do problem. 3. testing – may be have a review to come in to go over make it optional so if you make it fine, but doesn't count against you.

10. What is your overall assessment of your achievement in this course?

I really found this course to be helpful and it really helped boost my confodence in my math skills. The most important piece of the puzzle was the instructor's guidance. Without her, I would have been in bad shape.

I have certainly learned a lot. I know most of it I learned once in high school but that was 20 some years ago and without this class I wouldn't be able to advance.

I gained confidence taking this course, and that is the best achievement I could have accomplished.

I had some set backs (computer probls & health), & Prof. Chow made sure that I opt what I needed. I believe I could've done better but w/ the set backs, - I believe I did the best I could.

I feel nervous about going on I hope I have learned enough to feel comfortable. I have always been confused in math but I <u>really</u> want to do this & I want to do it <u>well</u>!

11. Are you going to take another on-line math course in the next semester? Why or Why not?

Yes, because the same instructor is teaching it and it will be convienient.

Yes I definitely will. Just for the flexibility.

Yes, I plan on taking one in the fall. This format is the best for my schedule.

No, I only need Business Math, and HACC is providing it in the Spring at my employment

No – I ran into to many problems – mainly w/ my computer.

No, to scare. It will get harder and I will be completely lost. Don't want to get to College Algebra & look & feel stupid

12. What is your overall assessment of this on-line development course? Should we continue to offer it? Please include suggestions for any changes.

I hope that the online courses continue to be available. I cannot catch up learning the basic math skills if it isn't offered anymore. This is a very important tool for people that want to get their degrees but have to work at the same time.

Yes, it should remain. There should be more on-line courses. The only changes are the ones that I have mentioned to the web site and maybe more flex in the test schedule.

Yes, it should be offered. So many older students, such as myself, have been out of school for such along time that math skills are weak. This course is a great remedial course.

Definitely continue to offer it, work out some very minor adjustments, as mentioned above.

It's a good course, should continue to offer, but I believe it could be better by making some adjustment (that I mentioned throughout the survey).
Liked it but won't take it again need to ask questions to make sure I really understand. I feel the course can be successful it needs some fine tuning.

13. What advice would you give to future students so that they will be successful in taking on-line math courses?

Study!!! Make sure you read the explanations for each section of the pie and practice.

Only take them if you have great self-discipline and take advantage of all your resources.

Don't wait until an assignment is due to start it. Time discipline and allocation is essential.

Maybe explain to them about ALEKS, more in depth, more chat rooms for students, more clarification of on-line assessments, as mentioned above.

Make sure you have a reliable computer. ☺

To ask question and if they can't go to learning center they may be better off skipping it.

Thank you for your participation. Your generous comments and suggestions will help to improve the course.

Appendix X

B. Student comments on Math 051 Intermediate Algebra

9. **Name three areas that you like most about the coursecompass web-site and three areas that you don't like about the coursecompass web-site.**

I like the ability to watch videos that teach every section. I like being able to take a test on each section online. I like being able to take tests online instead of having to drive to a campus. I did not like that I could not see the videos very well. I did not like that I could not tell if there were new messages or postings from the homepage. I did not like that we needed to type in the answers instead of having multiple choice for the online tests.

Three areas I liked were the tracked exercises/guided solutions, reliability/availability of the website itself, and the sample test areas. Three areas I didn't like were the requirements to type in long equations and answers with multiple exponents and mathematical symbols, the computers inability to distinguish between answers that were the same, just not in the exact syntax that the computer wanted to see, and the visibility of the writing on the video lectures.

I liked the linked tutorial exercises, online textbook, and video lectures. I didn't like the lack of an email client, when the online textbook froze, and the fact you had to click through numerous pages to view the discussion board.

I like practice tests, bulletin board, and practice exercises. No real negatives.

likes – a) the study guide. b) the video lectures. c) the sample tests. dislikes – a) the visuals on the video lectures. I couldn't make them screen size and sometimes the writing was too small and not dark enough. Media player is a little slow too, so sometimes the problems were smudged. The typed problems were clearly visible; it was just the handwriting. Certain instructors were much easier to follow too. b) finding everything. c) Not knowing how to install some of the programs.

I did not like any of it.

10. **What is your overall assessment of your achievement in this course?**

I am very impressed with how well I did. I don't feel I have every put so much into a course.

I actually surprised myself and didn't panic when I started getting confused. Math wasn't my greatest subject in high school and I was unsure of my skills even though I do very well in all my others. It's more of a mental block than anything, or intimidation at first.

I believe I have finally learned the necessary principles in order to pass this course, this is my third attempt.

I learned, good course.

I think I will get an accurate grade for the time and effort I put into it. It depends on the final. I expect a low "A:" or a "B".

i have offically dropped my gpa due to this course. i may not have ever liked math, but i did well in all of my classes. if i could afford to withdraw from this class, i would have.

I think I did well.

11. **Are you going to take another on-line math course in the next semester? Why or Why not?**

Yes, I am registered for Abnormal Psych in the Fall. I have taken three semesters of online courses and I will continue.

I will be taking Business Calculus in the fall because it's more conveniant to my fall schedule.

I will be taking Introduction to Statistics this summer. This course is required for my major.

No, because I will have completed my certificate requirements.

I thought about it but there aren't any in the summer; that is when I plan to take College Algebra. I don't know if I would anyway. It would really depend on the teacher. I wouldn't have done nearly as well if the instructors weren't so understanding.

No!, if im am going to waste my money on a useless mathbook like this one, i am at least going to make a professor stand infront of me and explain what the book doesnt.

No – not required to.

12. **What is your overall assessment of this on-line development course? Should we continue to offer it? Please include suggestions for any changes.**

I think this was a great course, and I hope that you continue to teach it using coursecompass. I really think that the time limits on the online and proctored tests should be extended or done away with. I was not able to complete all of the questions on the proctored tests due to the time limits. If the test was multiple choice, the time limit would be fine. Please have some compassion for those of us the work a little slower. I feel that I got a better Math education in this online course then I would have in a

classroom. I had multiple resources at my disposal and I was able to have one on one communication with my Professor.

I think you should continue to offer this course if it is managed as efficiently as was done by Professors Chow and Shutters. The material lends itself to self-learning as I was very mathematically challenged before I took this class and picked it up very well I think.

I would make more multiple choice answers in the tests to reduce typing time and to avoid the problem of matching exact syntax for the computer to accurately score tests. I would also make the math symbols a permanent part of the course instead of having to bring it up manually every time. It goes away with each question in the tracked exercises.

Overall I feel this course has been well designed and should certainly be offered every semester. An email client should be included in the course compass program and the discussion board be implemented more.

Good course. Continue to offer it.

I think it's wonderful for students who for some reason or another can't come to class. I would definitely add an introduction lesson in person explaining the software and installations. I would have appreciated someone walking me through the site too. Overall, I was very happy to be able to take the class from off campus. It was very helpful in fulfilling the requirement.

you really dotn want to know what i think.

Yes definitely continue to offer.

13. **What advice would you give to future students so that they will be successful in taking on-line math courses?**

Keep up with the work, do some math every night so you don't get behind. Keep in contact with your professor as often as possible so you don't get stuck. Oh, and breath deeply.

Don't procrastinate, like any distance learning course. There is plenty of time if you use it wisely.

Get a DSL or cable connection and study hard.

Work at it every day.

Be prepared to put a lot of time into sorting through the material. It's not a shortcut.

DONT WASTE YOUR TIME OR MONEY!

Sign on often – don't let yourself get behind. Use the tracked exercises and sample tests – they were very helpful.

Other comments:

Good points about coursecompass.com:

Helps due to having all my senses stimulated.
Good to have all of the exercises available to me.
I am a Paramedic, and being able to feel comfortable with math is a matter of life and death.

Bad points about coursecompass.com

Unable to do the online textbook, it freezes my compute with a 56k modem.

Tutorials should be multiple choice, not fill in the blank = not always going to write the answer the same as the computer. The system is not flexible to the many ways to express a problem.

Need to know when there are new discussion postings from the "my coursecompass page."

Need to be able to have an e-mail account in coursecompass, should not have to use home e-mail address.

Need to be able to see what questions you got wrong on the tests, otherwise you don't know where you need to improve.

Updated info for newer Graphing Calculator, like the TI – 86.

Thank you for participating in this evaluation process

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